

ENERGY STAR® SENIOR LIVING ENERGY MATTERS FOR RESIDENT HEALTH

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August 2020

Overview

Senior living communities serve a uniquely vulnerable population that spends a significant amount of time indoors. While much attention is appropriately paid to the health and care aspects in a senior living community, the ways in which a building(s) within a community is operated can not only save money but also have a positive impact on the health and comfort of residents.

How Maintenance Decisions Influence Resident Health

The Harvard [Building Evidence for Health](#) project has defined 9 Foundations of a Healthy Building: ventilation, air quality, thermal health, moisture, dust and pests, safety and security, water quality, noise, and lighting and views. While all staff at senior living communities provide care in some capacity for residents, many of these specific characteristics are governed by decisions maintenance staff make while providing routine services. Maintenance staff can help maintain the health of community residents by:

- Performing routine and remedial maintenance on building systems
- Regularly testing indoor air quality (IAQ) and water quality
- Surveying residents regarding their experiences with thermal health and comfort



Health Benefits Associated with Well-Maintained Building Systems

Ventilation	Good ventilation is associated with a healthier indoor environment and improved cognitive performance for all building occupants.
Indoor Air Quality (IAQ)	Good indoor air quality (i.e. low levels of indoor pollutants like volatile organic compounds and CO ₂) reduces stress on the respiratory system, improves the health of residents, and decreases associated medical costs.
Moisture	Humidity levels between 30-60% reduce risk of disease transmission because virus particles are less likely to remain suspended. Moisture control goes hand-in-hand with ventilation and IAQ to improve the health of the building and its occupants while reducing associated medical costs.
Thermal Health	Good thermal health, in conjunction with good ventilation, is associated with healthier and comfortable indoor environments that reduce the likelihood of headaches, respiratory issues, and fatigue.
Dust and Pests	Preventative pest management strategies that use fewer pesticides are associated with fewer carcinogens, therefore reducing building occupants' exposure to harmful substances. Additionally, reduced dust levels improve respiratory comfort for all building occupants.

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Good Maintenance for Good Health

Follow these HVAC basic preventative maintenance items to drive energy savings and create healthy living environments.

Operational

- Create a maintenance plan to standardize intervals of routine cleaning and preventive maintenance. Ensure that all associated staff are aware of building code standards, and able to promptly respond to resident concerns.
- Ensure that indoor air quality is being maintained at adequate levels according to code requirements.
- Avoid excess ventilation which can increase humidity and compromise comfort. However, take care to have adequate ventilation for optimal human health and to ensure bad odors are being routinely flushed out.
- Check your filters. To help mitigate the transmission of infectious aerosols ASHRAE recommends a minimum MERV 13 filters for all senior living facilities. If needed, check with your HVAC vendor to verify the best filter for your unit to maximize filtration without adversely affecting the system's ability to maintain desired temperature.
- Consider portable HEPA filters in areas where many people gather, to provide the cleanest air possible to the space.
- Clean PTAC filters routinely. Consider incorporating into general housekeeping tasks as a best practice.

Quarterly Preventative Maintenance

- Ensure that any filters used on large equipment (RTUs, AHUs) have been replaced on a quarterly basis.
- Inspect HVAC and plumbing equipment to identify and eliminate sources of moisture.
- Condensate pans and drains should be inspected and cleaned quarterly.

Annual Preventative Maintenance

- Ensure cleanings for PTAC/fan coils/split system units, and other air conditioning equipment are performed on at least an annual basis.
- Inspect hidden ductwork – in areas where ductwork may not be visible, ensure that all ductwork is intact and connected. If broken ductwork is found, repair immediately.
- Conduct annual air quality testing.
- Inspect RTU equipment belts for tightness and wear. Bolts should be tightened on fans and compressors.
- Inspect and maintain terminal units:
 - Coils, dampers, actuators, and fans should be regularly cleaned and inspected, at least annually.
 - Vacuum dust and debris off, do not use compressed air or a brush as all the dirt will end up in the duct work.

Service Providers Can Help

If maintenance staff is unable to perform the recommended routine maintenance tasks, it is imperative they seek qualified service providers to assist. The costs of not performing routine maintenance are measured by increased emergency maintenance requests, reduced equipment performance and longevity, building damage, and most importantly, negative resident health impact due to neglected HVAC systems. Regular, thorough preventative maintenance can reduce energy costs and extend the life of systems meaning equipment is replaced less frequently.

Please contact us with any questions!

For more information, please contact Clark Reed, U.S. EPA Commercial Buildings Program, Senior Care: Reed.clark@epa.gov